



Management of Conflicts Linked to Pastoral Resource Organizations in the El-Bayadh Region (Case of Brézina), Algeria

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Authors' contributions

"This work was carried out in collaboration among all the authors. Authors MMB and TN designed the study, carried out the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors MMB and MK managed the analyzes of the study. Authors HK and ZK managed the documentary searches. All authors have read and approved the final manuscript."

Article Information

DOI: 10.9734/ARJA/2020/v12i430089

Editor(s):

(1) Dr. Mevlüt Gül, Suleyman Demirel University, Turkey.

Reviewers:

(1) David Kimenchi Mugamb, Meru University of Science and Technology, Kenya.

(2) Adonia K. Kamukasa Bintoora, Nkumba University, Uganda.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/56405>

Received 18 February 2020

Accepted 24 April 2020

Published 30 April 2020

Original Research Article

ABSTRACT

Economic, social and political transformations have a manifest effect on the relationships that the various actors have with steppe resources. Highlighting the multiplicity of actors explains the development of conflicts over the use of this resource.

The present work aims, on the one hand, to shed light on the problem of conflicts in the Brezina area, in particular the identification of conflicts and the analysis of the various socio-economic issues of these conflicts. And on the other hand, to study the different mechanisms contributing to the management and neutralization of these conflicts, and consequently, to ensuring sustainable local development of this territory.

The results of joint classification obtained in our groups of surveys presenting similar declarations to carry out classes of authorized variables. The suitability of the variables in these measurement

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classes seems to reveal the same capabilities of representations. In the most important variances attains 100%. that of these key variables, to maintain good relations with local authorities (Mbr1), and the impact of the presence of nomads in the territories (Pnt), and more than 90% for an essential role of controlling farmers and breeders (Rec), They are effective in conflict management (Egc), these aspects reveal the strategy of these breeders in the management of resources in the territory. The index of the alpha value of the determined cronbach, shows satisfactory results around 0.887%. It should be noted that conflict resolution is closely linked to cultural specificities, community structures and the mode of communication between users. This resolution currently remains difficult and ambiguous because of the presence of several actors ; users of steppe areas, and of a multi-institutional system.

Keywords: Local development; conflict; actors; territory; right of use; steppe areas.

1. INTRODUCTION

Crops and livestock, the two essential components of production systems, maintained by traditional practices based on a high use of space, adapt by increasing their pressure on natural resources: sedentarization of transhumant livestock, cultivation of rangelands, and intensification of industrial agriculture. Faced with pressure on land and developing adaptive strategies, farmers and pastoralists have adopted less and less peaceful behavior over time. The local population represented by its Jmaâ (traditional community institution) has long exercised its social control over these resources. These actors behave in a strategic manner. They use different methods and strategic tools at their disposal, by entering into alliances, they anticipate, they coordinate their actions to extend their area of influence, they adapt and play with the rules [1]. The current territorial economy established governance as a principle of territorial management which subtracts public action from the monopoly of institutions and administration to entrust it to groups of actors of diverse origins and skills [2]. the territorial economy mobilizes two explanatory categories (geographic proximity and organized proximity) [3].

This participatory and autonomous institution had the role of managing the internal affairs of the village community (distribution of water, distribution and control of the use of collective and cultural land, resolution of conflicts over the use of rangelands, The creation of village associations for local development. This new policy aims to empower rural populations by involving them in the development process of their territories. It has come to revitalize the local social capital of village communities by instituting a new mode of participation and methods of dealing with individual and collective interests likely to come into conflict with the management

of the Jmaâ. Admittedly, this institutional change has favored the sharing of knowledge and powers between the beneficiary population, which has become involved in their own development, and the managers of development projects. However, it has caused a kind of imbalance in the operating system of village societies which may explain the current problems of conflict management linked to the exploitation of natural resources in the Brezina region. Indeed, the area of brézina, being the heritage of the social group which lives there, to manage it collectively, means the exercise on this space of several competing or complementary activities and the existence of several actors having different rights. This raises the problem of the organization and implementation of an institutional framework defining the role of the different actors involved in the management of this territory. The benefit of these resources increases the social capital specific to each individual, creates added value which applies to their capacity for action [4].

Us in this study in general interested in understanding and analyzing conflicts related to natural resources in this region. Find a way to manage and prevent conflicts. For this, it is important to have a perfect knowledge of the reality of conflicts as they arise and are managed in this space.

2. MATERIALS AND METHODS

2.1 Study Zone

For the sake of precision and in order to delimit more coherent spaces, we have integrated into the choice of our study area discriminating elements such as physical criteria (rainfall, vegetation and soil) and socio-historical criteria (clan history, setting populations, community relationships). This approach from our more

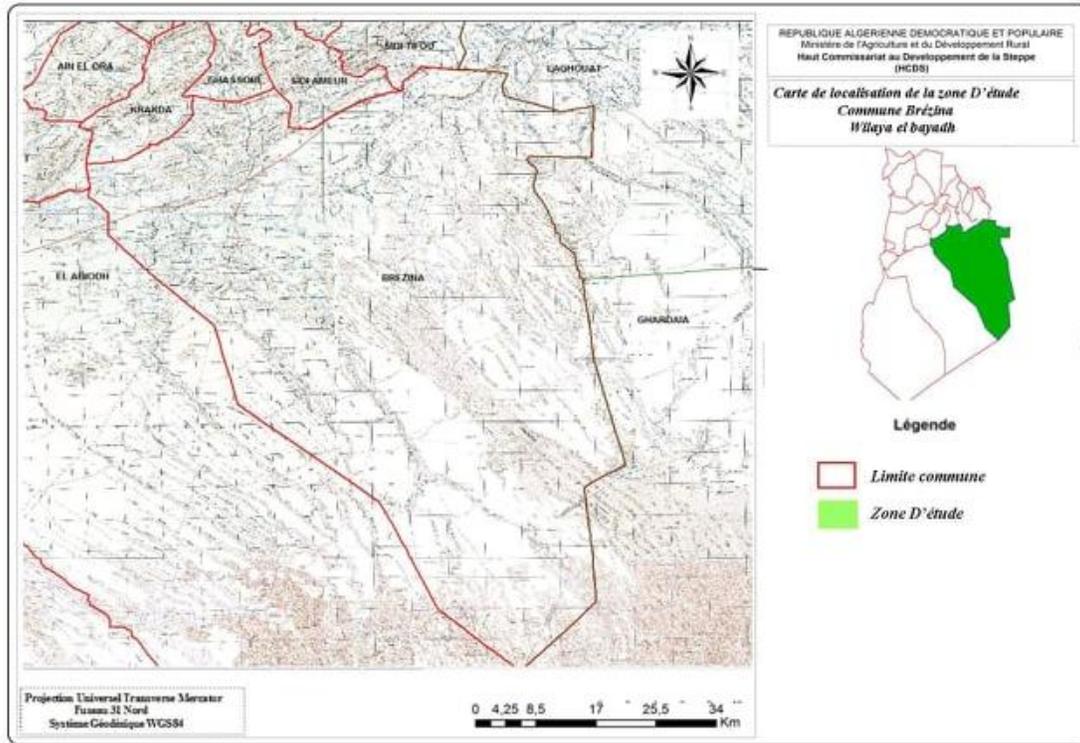


Fig. 1. Geographical location of the Brézina region

realistic point of view led us to choose the Brézina area, whose problem seems a priority, very specific and contrasting, to grasp the diversity of the practices and strategies of actors.

This is a land in the process of land saturation, the trend of which is towards the integration of agriculture and animal husbandry, where we will strive to better understand farming practices and traditional management methods, and use of natural resources.

The commune of Brézina is located south of the wilaya of El Bayadh. Constituting the transition space between the Saharan Atlas and the Sahara meadow, covers an area of 16,773.60 km² (Fig. 1).

2.2 Methodology

The objective was first, to identify the relationships that each party maintains with the other and to identify, thereafter, the different types of conflicts existing between them. Regarding the nomads, the choice of interlocutors was made at random. During our visit to the villages, we tried to approach the

nomads who were settled or who were passing through and tried to question them. For the inhabitants of the douars, we benefited from the support of the association of each douar which helped us to bring together a large part of the villagers of all age categories.

3. RESULTS

3.1 Data Collection and Variable Calculation

In our study, we used three series of interviews: interviews with the inhabitants of the douars (sedentary), with mobile breeders (nomads), with the authorities (waters and forests, municipalities).

The survey by interview with the sedentary allowed us to inform ourselves on the history of men and women, on their experience at the level of the locality, of the rural community, to identify the different forms of existing relationships between people of douar, their practices in relation to the use of natural resources and finally to identify the main conflicts relating to the use of these resources.

Interviews with the nomads allowed us to describe the current situation of mobile farming in the region and the relationships of these farmers on the one hand with the sedentary and on the other hand with the state institutions and to identify the different related practices for the use of natural resources (Water, forest and land).

Finally, the interview allowed us to identify the different factors that influence the participation or non-participation of these agents-actors in the management of natural resources.

Regarding interviews with state institutions, we tried to identify all the rules governing the exploitation of natural resources in the region as well as the problems and tensions existing between these different agent-actors. Subsequently, we verified the practices and behaviors of these agents-actors (observation of

practices related to the exploitation of resources compared to the modern and customary rules put in place for the right of use.

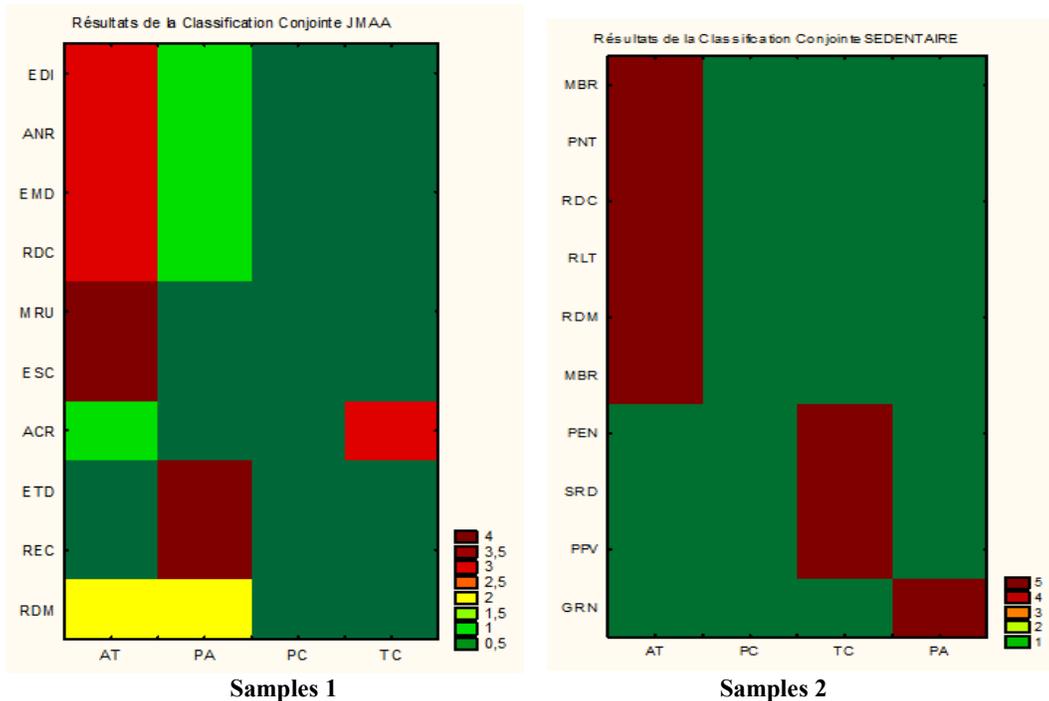
Another technique came to complete the investigation: the focus-group. It is a qualitative research technique which consists in bringing together a small group of people meeting specific criteria, in creating an open discussion based on the subjects proposed in relation to the objective of the study and in establishing an analysis-synthesis. to identify the main messages sent by the participants during the discussions, as well as the points of convergence and divergence between people.

Systemic analysis makes it possible to model and schematize reality in order to bring out the nature of the relationships and interactions between the different elements of a system.

Table 1. Representation of the percentages of information declared by the respondents (Average of the alpha index and eigenvalue). Summary of models

Dimension	Cronbach's alpha	Variance explained		
		Total (own value)	Inertia	Percentage of variance explained
1	,907	7.087	,373	37.301
2	,860	5.401	,284	28.425
Total		12,488	,657	
Average	,887a	6,244	,329	32,863

At the average Cronbach's Alpha value is based on the average eigenvalue



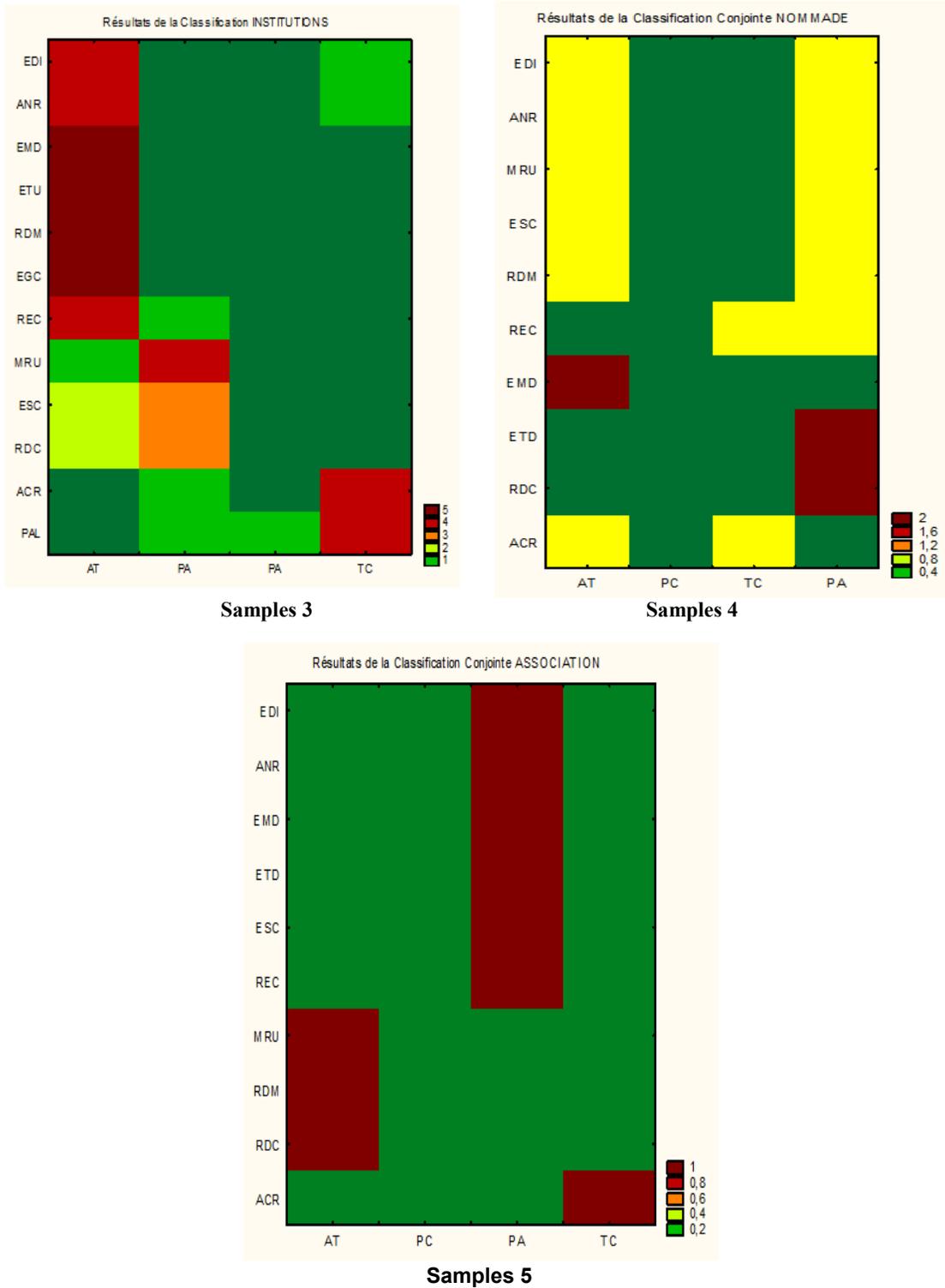


Fig. 2. Joint classification of the different classes (Samples 1, 2, 3, 4, 5)
 AT items: Total agreement; PA items: Rather agree; PC Items: Rather Against
 TC items: Totally against

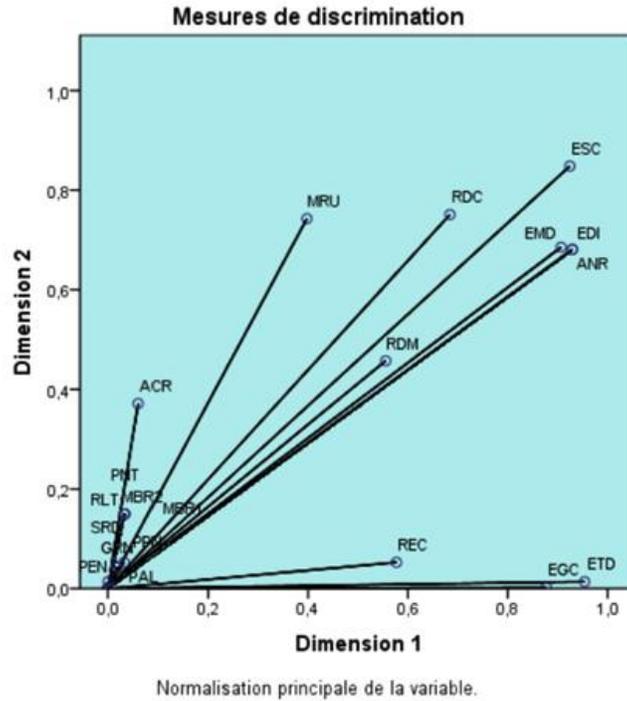
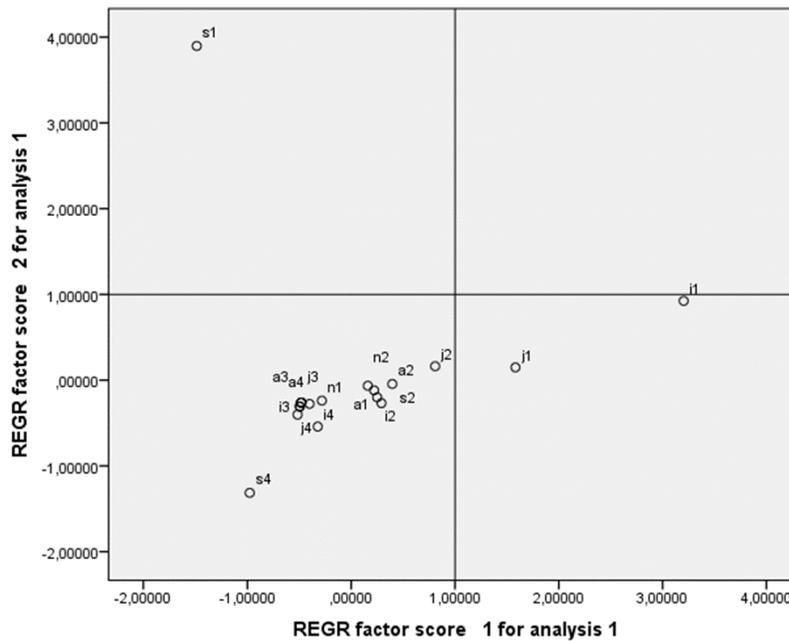


Fig. 3. The most discriminating factors represented by all of the respondents

PAL: they do not participate in local life. REC: role of control of farmers and breeders; ACR: agriculture does not understand anything. DRC: They respect customary law; RDM: they respect modern law; ESC: They know how to communicate with other actors; MRU: They maintain good relations with local users; ETD: They are always available. EMD: They monopolize the decision; ANR: They are able to represent us; SRD: sedentary people are responsible for the deterioration of steppe; GRN: involving nomads in resource management natural; RLT: respect the law of transhumance; PNT: the presence of nomads in the territories; EGC: They are effective in managing conflicts; PAL: they do not participate in local life.



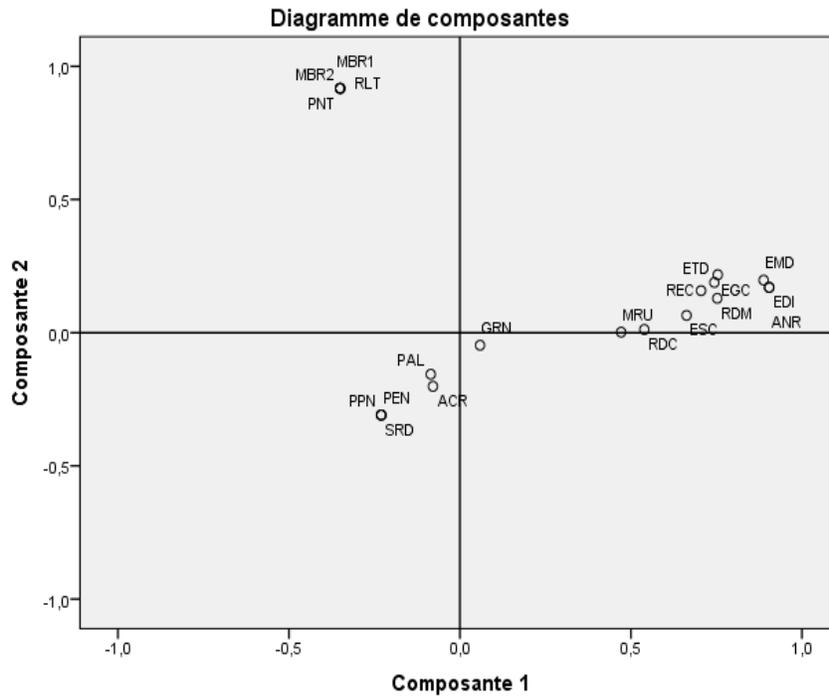
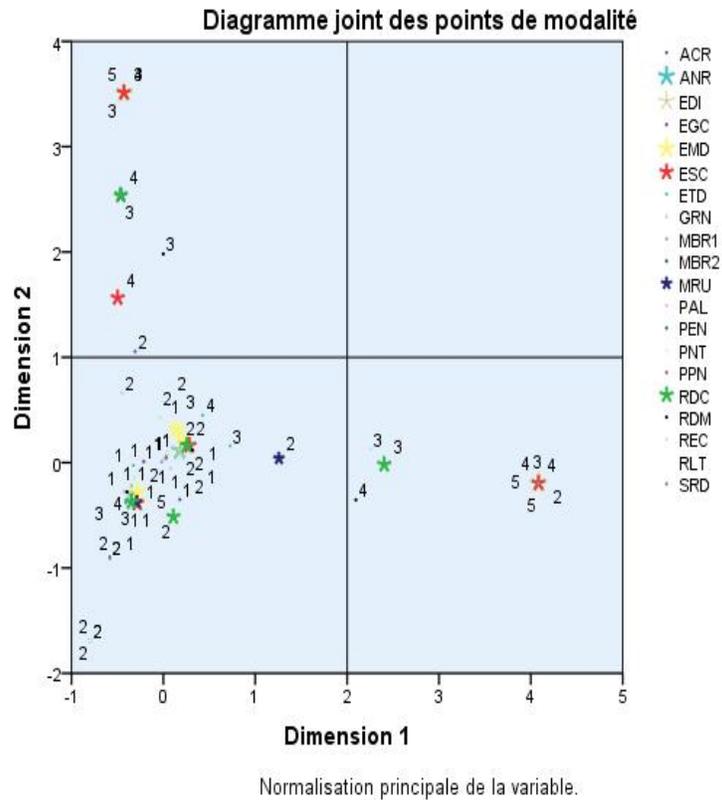


Fig. 4. Distribution of decisions for all respondents. Component matrix ^a



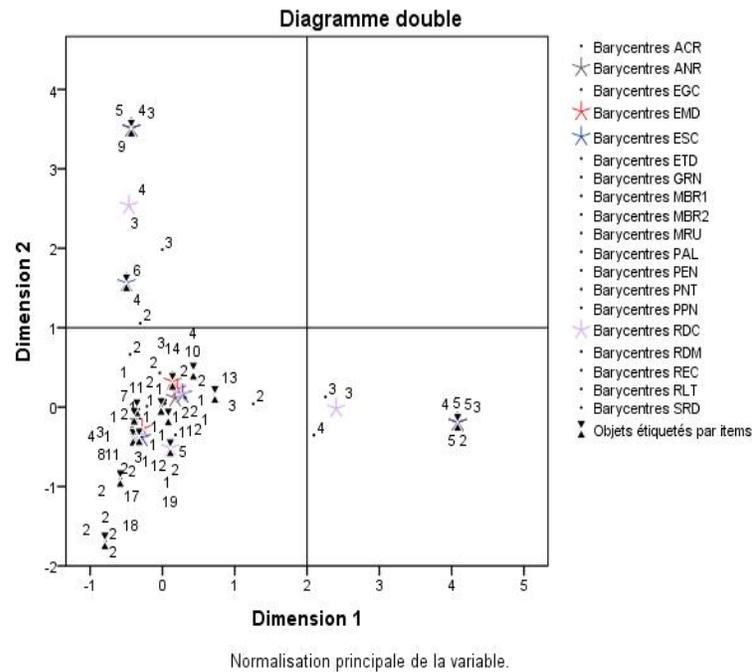


Fig. 5. Centers of gravity and BiPlot objects, objects labeled by items

3.2 The Discriminating Variables are Present as Follows

The factorial analysis shows the percentage of the characteristics of the breeders' responses, which are, grouped around the specifying values. The information to be abbreviated for ESC and EGC are well represented on axis 01. The greatest number of responses from two to five are repeated on both axes and even the set of information numbers grouping in axis 2 presents general information characterizes in any way the EMD and RDC information (Fig. 3). Our results clearly show the good quality information represented and declared by the jemaa group in axis 01 and the most important responses are known with their characteristics such as j1 and j2 the latter justify the scarcity of quality of decision (Fig. 5). Poor quality information is presented by the other groups and remains in question to confirm the source through several surveys.

4. DISCUSSION

The transition from Jmaâ to association has had a positive impact on the collective action of village communities, but has caused a dysfunction in terms of customary rules, particularly with regard to the management of natural resources. This dysfunction can be

explained by the fact that these associations have the means and tools that can be described as modern, but they have not taken advantage of the social capital of the Jmaâ which has long watched over the respect of customary rights. It seems necessary to set up a system for sharing skills between the Jmaâ and the association. For this, we think that it would be interesting and judicious to reform the Jmaâ instead of divesting these prerogatives for the benefit of the association. We recall that the Jmaâ has had deep social roots since time immemorial, unlike association. Jmaâ, an association and all kinds of organizations, have power, this is the product of relationships, negotiations and confrontations. We can say that the association has started to replace the Jmaâ for some functions in the region, in other words, we note a weakening of this rural organization. The Jmaâ keeps its functions and its dynamics within the rural community. In some douars, we are witnessing the intervention of a mixed commission in certain cases to settle certain conflicts.

The problems that we have been able to identify concern the massive presence of nomads in the land used by sedentary farmers. The interviews showed us that there are conflicts between the different users of the steppe area, in particular between the farmers and the mobile pastoralists

Table 2. Quality of representation of extraction method: Principal component analysis, total variance explained

Variables	Initial	Extraction	Initial own values			Extraction sum of squares of the factors selected	Component matrix ^a		Component coefficients matrix ^a	
			Total	% of variance	% accumulated		Dimension 01	Dimension 02	Dimension 01	Dimension 02
EDI	1,000	, 846	6.228	31,141	31,141	31,141	, 904	, 170	, 145	, 043
ANR	1,000	, 846	3.945	19,726	50,866	50,866	, 904	, 170	, 145	, 043
EMD	1,000	, 828	2.976	14,879	65,745		, 888	, 197	, 143	.050
ESC	1,000	, 443	1.366	6.830	93,474		, 663	.065	, 106	.016
RDM	1,000	, 583	, 635	3.175	96.649		, 752	, 129	, 121	.033
DRC	1,000	, 291	, 288	1,439	98.088		, 539	.012	, 087	.003
ACR	1,000	. 047	, 242	1.208	99,296		- .079	-, 202	- .013	-, 051
REC	1,000	, 522	.075	, 374	99,670		, 705	. 158	, 113	.040
EGC	1,000	.616	.013	.064	99.999		, 754	, 218	, 121	, 055
MBR1	1,000	, 964	.000	.001	100,000		-, 350	, 917	-, 056	, 233
PEN	1,000	, 149	.000	.000	100,000		-, 230	-, 309	- .037	- .078

At 2 components extracted

recently settled and semi-mobile. Finally, the people interviewed expressed their lack of means to manage these conflicts (lack of mechanism for resolving conflicts).

The bringing together and the spatial superposition of livestock and crop farming systems on a regional scale, creates conflicts of access and use of natural resources in the face of which the individual strategies of adaptation of actors are not sufficient to regulate. The policies planned to regulate the access and use of natural resources, and to support territorial development by state technical services are hampered by a lack of means and interventions are limited to emergency situations imposed by conflicts or extreme constraints.

In the region, many actors are involved in agropastoral conflicts. Besides, breeders and farmers, have multiple actors who intervene in a more or less direct way in the resolution of conflicts. Socio-anthropology of development and Political Ecology approaches jointly strive not to fall into naive populism, by avoiding reducing local actors to dominated and passive categories. Conversely, it is a question of exploring their strategies, their room for maneuver, even the instrumentation of exogenous devices [5-8]. The conflicts are diverse between the actors and vary from one context to another. In most cases, the conflicts between the different actors arise from the fact that they do not have a shared feeling of the meaning to give to the collective interest around the pasture areas, even delimited, which they exploit together.

This is why no consensus has so far been found around respecting these areas, giving rise to numerous conflicts, including damage to crops by breeders, progressive cultivation of rangelands by farmers.

5. CONCLUSION

Conflicts between farmers and herders in Algeria in general and in the study area (Brézina) in particular have become very frequent in recent years. These conflicts, which in most cases have their origins in the management of natural resources and space, leave no one indifferent as the damage is so impressive. Unfortunately, the causes of these conflicts are not clearly identified and little field work is available to document this fact of society. According to pastoralists' statements, conflicts in the region are due to

climatic disturbances, population growth and land pressure. However, this comparative study, conducted on the basis of interviews with 25 breeders and 25 farmers, shows quite well that, the resurgence of conflicts in the Brézina area is exacerbated especially by the sudden and massive arrival of herds in a region with pastoral vocation on the one hand and poor management of these conflicts on the other. Although our results cannot be generalized to the whole of the Brézina zone, they prove sufficiently that the conflicts between farmers and breeders are delicate and complex. These results constitute a basis for possible future research aimed at improving the common management of natural resources.

6. RECOMMENDATIONS

- The adoption by the Algerian government of clear and concerted legislation which must reserve spaces reserved for breeding.
- The digging of water points and drinkers along the transhumance tracks would also reduce the ramblings of the animals which, by deviating from their paths, ransack the fields.
- The training of qualified managers who are able to resolve conflicts between farmers and breeders. These frameworks must remember both modern and traditional legislation.
- The development of all these texts should involve the representatives of the Fulani and the involvement of mobile herders in indigenous development projects.

ACKNOWLEDGEMENTS

The lead author would like to thank Mr. Mahmoud, head of the agricultural development project in the area, for their important role in coordinating all of the breeders and for their participation in carrying out this study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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ANNEXES

Table. GPS coordinates for all surveys

Samples		Number cordoned	Cordoned x	Cordoned y	Cordonné z	Altitude
01	Jmaa	1	345183,22	3649785,84	31	773
		2	345341,16	3649885,23	31	774
		3	343259,70	3657610,97	31	820
		4	346498,47	3648659,05	31	772
02	The sedentary	5	372210,03	3650279,20	31	826
		6	343641,00	3645860	31	779
		7	348982,67	3644293,32	31	765
		8	351920,30	3647685,97	31	763
		9	343162,73	3645176,14	31	779
03	State institutions	10	371118,35	3652392,70	31	837
		11	345701,87	3660557,94	31	857
		12	374620,73	3647456,60	31	822
		13	335001,96	3657604,86	31	860
		14	349311,65	36342,54	31	763
04	The Nomads	15	346299,78	3633424,64	31	762
		16	367859,57	3650081,01	31	812
		17	351475,33	3647334,19	31	765
		18	339964,38	3651403,44	31	785
		19	347645,84	3647776,17	31	772
		20	350265,15	3644369,00	31	764
05	association	21	349735,91	3643504,54	31	763
		22	382823,26	3650821,26	31	816
		23	398418,47	3697068,84	31	959
		24	394656,83	3697324,04	31	977
		25	340266,65	50525,70	31	785

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